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ABSTRACT

This study examined the role that historically black colleges and universities (HBCUs) play in preparing or socializing African American faculty. Using data from the 1992 National Study of Postsecondary Faculty, the research sample (n=1,522) included African Americans, with faculty status and some instructional duties, who were employed full time in fall 1992. The study sought to compare the characteristics of African American faculty who earned bachelor's or doctoral degrees from HBCUs with those of other African American faculty, and examined to what extent earning a degree from an HBCU related to research productivity and to satisfaction and control over one's work. Four conclusions were drawn: (1) Earning a degree from an HBCU is unrelated to preparation or socialization of African American faculty; (2) HBCUs may be important producers of faculty in the fields of education, science, mathematics, and engineering; (3) a substantial portion of African Americans educated by HBCUs return as faculty members; and (4) the role of the HBCU in preparing African Americans for faculty careers has changed over time. Seven tables summarize the data. (Contains approximately 60 references.) (CH)

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THE ROLE OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES IN PREPARING AFRICAN AMERICANS FOR FACULTY CAREERS

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The Role of Historically Black Colleges and Universities

in Preparing African Americans for Faculty Careers

Introduction

African Americans are severely underrepresented among the nation's college and university faculty relative to their representation in the U.S. population. Only 5.2% of all full-time faculty are African Americans (Kirshstein, Matheson, & Jing, 1997), compared with 12.6% of the U.S. population. African Americans are particularly underrepresented among faculty in engineering (3.0%), natural sciences (3.6%), and business (3.7%), and among faculty working at the nation's public research universities (2.8%) (Kirshstein, Matheson, & Jing, 1997). Analyses of the 1992 National Study of Postsecondary Faculty (NSOPF:93) reveal that more than one-third (37%) of full-time African American faculty work in colleges and universities in which African Americans comprise the majority of the student body. Certainly, the majority of predominantly Black colleges and universities are HBCUs.[1]

In addition to employing a disproportionate share of African Americans among their faculty, HBCUs may also play an important role in the production of new African American faculty. About 27% of freshmen attending HBCUs plan to earn a doctoral degree, compared with 17% of all freshmen nationwide attending four-year colleges and 20% of all freshmen attending universities (Sax, Astin, Korn, & Mahoney, 1997). Nine of the top ten most common baccalaureate institutions of African Americans who received doctorates between 1992 and 1996 were HBCUs; these nine HBCUs were the source of bachelor's degrees for 646 of the 5,562 (12%) African American doctorates awarded over this period (Henderson, Clarke, & Woods, 1998).

Unquestionably, historically black colleges and universities (HBCUs) have played an important role in educating African Americans. As recently as 1965, about two-thirds of African American college students attended HBCUs (Wilson, 1994). Although increasing numbers of African American students are enrolling in and receiving degrees from predominantly White colleges and universities, HBCUs continue to educate a disproportionate share of African Americans (Nettles & Perna, 1997). The number

of African American first-time, full-time freshmen attending four-year HBCUs increased by 22% over the past decade, from 97,286 in 1986 to 123,993 in 1996 (Nettles, Perna, & Freeman, 1999). Although fewer than 5% of the nation's four-year colleges and universities are HBCUs, one-third of all African American first-time, full-time freshmen attending four-year colleges and universities in 1996 were enrolled in HBCUs. In 1996 HBCUs awarded 28% of the bachelor's degrees, 17% of the first-professional degrees, 15% of the Master's degrees, and 11% of the doctorates received by African Americans nationwide (Nettles, Perna, & Freeman, 1999).

The success of HBCUs has occurred in the context of low levels of institutional resources and relatively disadvantaged student bodies. HBCUs tend to have lower endowments and smaller proportions of faculty with doctoral degrees than other colleges and universities (Freeman, Perna, & King, 1999). The challenges facing HBCUs are also evidenced by the lower family incomes and lower levels of academic preparation of the students served. Data from the 1997 CIRP survey reveal that nearly one-half (45%) of freshmen attending HBCUs come from families with incomes below $30,000, compared with only 22% of all freshmen attending four-year colleges and 15% of all freshmen attending universities nationwide. Higher proportions of freshmen at HBCUs than of freshmen at four-year colleges and universities nationwide report that they need remedial work in English (18% versus 11% and 7%) and mathematics (49% versus 27% and 19%) (Sax, Astin, Korn, & Mahoney, 1997).

The future of HBCUs has been challenged by recent actions by the courts and state legislatures. Under the 1973 ruling in *Adams v. Richardson*, the 19 states with previously segregated systems of higher education were required to file plans specifying goals, actions, and timetables to, among other requirements, strengthen the quality and scope of programs offered by HBCUs, thereby enhancing the role of HBCUs (Wilson, 1994; Southern Education Foundation, 1998). In the 1992 case of *United States. v. Fordice*, however, the U.S. Supreme Court ruled that state legislatures must either eliminate HBCUs because they are a vestige of segregation or provide evidence of their continued educational value. Nonetheless, little is known about the role that HBCUs play in preparing, or socializing, African

American faculty. This study uses the most recent nationally representative source of data available, the 1992 National Study of Postsecondary Faculty (NSOPF:93), to explore this issue.

Conceptual Framework

This research draws upon theories of organization socialization to explore the role of attending an HBCU in preparing African American faculty. The process of becoming socialized to a new profession, such as college and university faculty, involves learning not only the knowledge and skills required to perform job tasks, but also the attitudes, values, norms, language, and perspectives necessary to interpret experiences, interact with others, prioritize activities, and determine appropriate behavior (Bragg, 1976; Van Maanen & Schein, 1979; Clark & Corcoran, 1986; Turner & Thompson, 1993).

The professional socialization process has been described as having three stages (Feldman, 1976; Corcoran & Clark, 1984; Clark & Corcoran, 1986). The first stage of the socialization process, anticipatory socialization, occurs during undergraduate and graduate school when prospective faculty members learn to anticipate their future roles (Tierney & Rhoads, 1993). During the first stage, the novice selects and is recruited to the profession, tests the appropriateness of the choice, and begins to develop the values, attitudes, motivations, beliefs, and behaviors of members of the profession. In the second stage, occupational entry and induction, the novice participates in formal education and training and completes crucial course work, comprehensive examinations, internships, and the dissertation. In the third stage, role continuance or role management, the individual is a participating member of the field, works to manage conflicts arising from work demands, and begins progressing to subsequent career levels.

Some evidence suggests that minority undergraduate and graduate students have fewer opportunities for professional socialization experiences than majority students (Tierney & Rhoads, 1993; Turner & Thompson, 1993). Nonetheless, opportunities for socialization experiences may be greater for African Americans who attend HBCUs than for their African American counterparts who attend predominantly White colleges and universities. African Americans who attend HBCUs have been shown

to experience less social isolation, alienation, personal dissatisfaction, and overt racism than African Americans who attend predominantly White colleges and universities (Pascarella & Terenzini, 1991). HBCUs seem to provide a social, cultural, and racial environment that is more supportive, caring, and nurturing for students and that promotes academic achievement and success (Fleming, 1984; Nettles, Thoeny & Gosman, 1986; Blackwell, 1988; Wagener & Nettles, 1998).

Some research has shown smaller achievement gains among African Americans at historically Black than at predominantly White colleges and universities. Ayres (1982, 1983) found that both African American and White graduates of predominantly White institutions averaged higher scores on the National Teacher Examination than their counterparts of the same race with comparable SAT scores who had graduated from HBCUs. Further exploration of this finding (Ayres, 1982; Ayres & Bennett, 1983) suggests that the achievement differences were attributable not to the predominant race of the institution, per se, but to differences between the two types of institutions in terms of the characteristics of faculty as well as characteristics of the student body, appropriations for faculty improvement, and curriculum design.

Other research suggests that achievement gains are at least as large for students attending HBCUs as for students attending TWIs (Fleming, 1984). Using descriptive statistics, Anderson and Hrabowski (1977) found that, at one research university, average undergraduate grade point averages, graduate grade point averages, and Master's level graduation rates were comparable for African Americans who had attended a predominantly Black undergraduate institution and for African Americans who had attended a traditionally White undergraduate institution. First-year cognitive gains in reading comprehension, mathematics, and critical thinking were found to be comparable for African American freshmen attending two HBCUs and African American freshmen attending 16 predominantly White colleges and universities after controlling for such variables as precollege achievement, sex, socioeconomic status, academic motivation, age, credit hours taken, campus residence, and academic aptitude of the freshman class (Bohr, Pascarella, Nora, & Terenzini, 1995; Pascarella, Whitt, Nora, Edison, Hagedorn, & Terenzini, 1996). A follow-up of the same students at the end of their second year of college revealed that, after controlling

for precollege ability, sex, socioeconomic status, age, credit hours taken, hours worked, campus residence, coursework, term papers written, and precollege ability of the freshman class, African American students at HBCUs scored substantially higher than African American students at predominantly White institutions on a scale of writing skills (Pascarella, Edison, Nora, & Terenzini, in press).

In terms of persistence, Pascarella (1985) found that nine-year bachelor's degree attainment rates were unrelated to the predominant race of the institution (i.e., Black/non-Black) among Black women and men after controlling for background characteristics, goal and institutional commitments, academic and social integration, and other institutional characteristics. Other research has shown that four-year bachelor's degree completion rates are higher for Black men and women who attended predominantly Black colleges and universities after controlling for background characteristics, academic ability, and other institutional characteristics (Thomas, 1981). From their comprehensive review and synthesis of prior research, Pascarella and Terenzini (1991) concluded that persistence rates and educational attainment levels are somewhat higher for African Americans who attend HBCUs than for African Americans who attend predominantly White colleges and universities. Braddock (1981) found that a smaller proportion of African Americans attending two HBCUs than of African Americans attending two predominantly White institutions reported that they had seriously considered withdrawing (25% versus 39%). Measures of academic integration were related to dropout propensity among African Americans attending the two predominantly White institutions, but not among African Americans attending the two HBCUs after controlling for background characteristics and commitments to the institution and educational goals (Braddock, 1981).

Studies of baccalaureate origins consistently show that HBCUs are important producers of African Americans who continue on to earn doctorates (Pearson & Pearson, 1985; Brazziel, 1983). Controlling for institutional size, the top 33 baccalaureate producers of African American women and men who earned doctorates between 1980 and 1990 were HBCUs (Solorzano, 1995). Wolf-Wendel (1998) found that HBCUs, particularly historically Black women's colleges, were more likely than

predominantly White colleges and universities to graduate "successful" African American women, as defined by earning a doctoral degree and being listed in *Who's Who in Black America.*

Taken together, a review of the literature and prior research suggests that attending an HBCU may have beneficial effects on the anticipatory socialization process for prospective African American faculty. One of the most important ways in which undergraduate and graduate students may be socialized to the faculty role is through an introduction to research behaviors and activities. Clearly research productivity is a primary determinant of "success" among the nation's faculty. Although various aspects of performance may be considered, researchers have generally concluded that salary, tenure, and promotion decisions are based primarily upon research performance (Martin & Berry, 1969; Hansen, 1988; Glassick, et al, 1997; Lewis, 1998). The emphasis of faculty reward systems on research performance over teaching performance has been shown to hold across different types of four-year colleges and universities and different academic disciplines (Fairweather, 1995, 1996).

Previous examinations of the research performance of African American faculty have been limited by the small number of African Americans included in most samples. Some have speculated that African American faculty may have lower publication rates than White faculty because they tend to work in historically black colleges and universities, institutions that generally have fewer resources to support faculty research and higher teaching and advising loads (Blackburn, Wenzel & Bieber, 1994; Blackburn & Lawrence, 1995). Although descriptive analyses have suggested that publication rates do not vary across racial/ethnic group (Elmore & Blackburn, 1983; Blackburn, Wenzel, & Bieber, 1994), the extent to which having begun the professional socialization process at an HBCU (i.e., having earned a bachelor's and/or a doctoral degree from an HBCU) influences the research productivity of the nation's African American faculty has not been examined.

Research Method

This study uses the 1992 National Study of Postsecondary Faculty (NSOPF:93), the most recent nationally representative database available, to explore the role of attending an HBCU on the preparation or socialization of African American faculty. This study addresses the following research questions:

1. How do the characteristics of African American faculty who earned their bachelor's degree from an HBCU compare with the characteristics of other African American faculty?
2. How do the characteristics of African American faculty who received their doctoral degree from an HBCU compare with the characteristics of other African American faculty who have earned doctoral degrees?
3. Is having earned a bachelor's degree or a doctoral degree from an HBCU related to research productivity, one indicator of successful socialization, among African American men and women faculty?
4. Is having earned a bachelor's degree or a doctoral degree from an HBCU related to satisfaction and control over one's work, a second indicator of successful socialization, among African American men and women faculty?

Sponsored by the U.S. Department of Education's National Center for Education Statistics, the NSOPF:93 is designed to provide a national profile of faculty, particularly with regard to their professional backgrounds, responsibilities, workloads, salaries, benefits, and attitudes. In the first stage of the two-stage sample selection, 974 public and private nonproprietary higher education institutions were selected; 817 agreed to participate. In the second stage, approximately 42 faculty and instructional staff were selected from each participating institution. A total of 25,780 questionnaires were returned by the 31,354 faculty and instructional staff who were sampled. For additional details on the survey methodology, refer to Kirshstein, Matheson, and Jing (1997).

The subsample used in this research is limited to African Americans with faculty status and some instructional duties who were employed full-time in fall 1992 (n = 1,522). About 13% of the 1,522 cases (n = 201) are missing data describing the institution from which the bachelor's degree was received.

Because the focus of this study is on the role of the type of undergraduate institution attended, these cases are excluded from the sample. Missing data analysis reveals that, although African American full-time faculty who are missing data describing the baccalaureate degree granting institution are similar in most respects to African American full-time faculty who are not missing these data, some differences exist. Compared with African American full-time faculty who are not missing these data, African American faculty who are missing data for their baccalaureate degree granting institution tend to be older, count the first-professional degree as their highest degree, teach in health sciences, and work in public two-year colleges.

The NSOPF:93 weight (WEIGHT) is appropriate for approximating the population of faculty from the sample. In order to minimize the influence of large sample sizes and the non-simple random sample design on standard errors, each case is weighted by the NSOPF:93 weight divided by the average weight for the subsample (average weight = 17.46). The unweighted and adjusted weighted sample includes 1,321 cases, representing 23,062 African American full-time faculty.

Model of faculty socialization

Two dependent variables are used to measure the socialization of African American full-time faculty. The first, research productivity, is defined as having at least one refereed publication in the past two years (1 = yes, 0 = no). Following the example of Fairweather (1997), the number of refereed publications is the sum of the number of articles published in refereed journals, book reviews, chapters published in edited books, monographs, and books. Research productivity is treated as a dichotomous rather than a continuous variable because 64% of all African American full-time faculty have no refereed publications in the two-year period. The second measure of successful socialization, satisfaction and control over one's work, is based on the indicators of successful socialization identified in the literature. According to Feldman (1976) and Corcoran and Clark (1984), indicators of successful socialization include general satisfaction with one's work, perceived control over the execution of one's work, self-motivation, and commitment to one's work. In this study, confirmatory factor analysis is used to derive the measure of satisfaction and control over one's work from seven variables in the NSOPF:93 database

describing satisfaction with authority to decide course content, decide courses taught, and make other job decisions, as well as satisfaction with work load, time available to advise students, time to keep current in the field, and advancement opportunities. Table 1 shows the factor loadings.

Insert Table 1 about here

Table 2 defines the variables that are used in the model of faculty socialization. In addition to the background characteristics of sex, citizenship, and experience, the two measures of socialization are also expected to be predicted by undergraduate socialization experiences, graduate school socialization experiences, and current socialization experiences. Experience is a confirmatorilly derived factor composite based on four variables in the NSOPF:93: age, number of years at the current rank, number of years at the current institution, and number of years since receiving the highest degree. Table 1 shows the factor loadings.

Insert Table 2 about here

Undergraduate socialization is measured by whether the bachelor's degree was earned from an HBCU, as well as undergraduate academic performance. Graduate school socialization is measured by whether the doctoral degree was received from an HBCU, as well as educational attainment, the type of institution from which the highest degree was earned, and whether the individual held a teaching assistantship, research assistantship, and/or a grant, scholarship, or fellowship. Current socialization is measured by the percent of time spent on research relative to the percent of time spent on teaching, teaching level, being a principal or co-principal investigator on at least one funded research project, academic field, and the type of institution in which the faculty member works, including whether the institution is a predominantly Black college or university. The NSOPF:93 does not include a variable for whether a faculty member works at an HBCU, per se. A proxy is created using the derived variable for the percent of African American, non-Hispanic students enrolled at the institution. In this research, a predominantly Black college or university is one in which African Americans comprise more than 50% of the student body.

Analyses

Descriptive analyses, including chi-square and oneway ANOVA, are used to examine the background characteristics and employment experiences of African American faculty who received their bachelor's degrees and doctoral degrees from HBCUs. Logistic regression analysis is used to isolate the effects of receiving a bachelor's degree and/or a doctoral degree from an HBCU on research productivity, a dichotomous variable, after controlling for background characteristics, undergraduate socialization, graduate socialization, and current socialization experiences. Ordinary least squares regression is used to isolate the effects of receiving a bachelor's degree and/or a doctoral degree from an HBCU on successful socialization, a continuous variable, while holding other variables in the model constant.

Some research suggests that attending an HBCU has a stronger influence on educational attainment and occupational status for African American women than for African American men (Pascarella, Smart, & Stoecker, 1989). Based on their examination of African American freshmen nine years after first enrolling, Pascarella and his colleagues (1989) found that attending a predominantly Black institution positively influenced educational attainment for African American women indirectly through academic achievement, but was unrelated to educational attainment for African American men. Attending a predominantly Black institution also had stronger positive direct and total effects on the occupational status of African American women than African American men. In order to explore sex differences in the socialization of African American faculty, interaction terms between sex and each independent variable are entered on the final step of the logistic and OLS regression analyses. The use of interaction terms tests whether the effect on each of the dependent variables (research productivity and satisfaction and control over one's work) of each independent variable is comparable for African American women and African American men.

Limitations

This research has at least two limitations. First, the focus of this study is on the role of HBCUs in socializing African American faculty with no attention to the potential effects of attending an HBCU among students of other racial/ethnic groups. Examinations of other racial/ethnic groups are restricted, however, because of the small numbers of non-African American faculty in the NSOPF:93 database who received their bachelor's degrees from an HBCU. Only 26 White, seven Hispanic, three Asian, and three American Indian faculty in the NSOPF:93 database earned a bachelor's degree from an HBCU.

Second, the NSOPF:93 is a cross-sectional database describing America's college and university faculty at one point in time (Fall 1992). The NSOPF:93 database includes only individuals who attended HBCUs and who were employed as faculty in fall 1992, with no data on the educational and occupational status of individuals who attended HBCUs but who were not employed as faculty in fall 1992.

Despite these limitations, this research provides a much needed examination of the relationship between attending an HBCU and African American faculty career outcomes. Although not perfect, the NSOPF:93 is the best available source of data for examining these issues.

Findings

Characteristics of African American faculty by baccalaureate degree origins

Table 3 compares the characteristics of African American faculty who did and did not receive their bachelor's degree from an HBCU, as well as the characteristics of African American faculty who did and did not receive their doctoral degree from an HBCU. In fall 1992, 40% of African American full-time faculty had earned their bachelor's degree from an HBCU. A higher percent of African American full-time faculty who earned their bachelor's degree from an HBCU than of other African American full-time faculty were U.S. citizens (98% versus 89%) and women (53% versus 45%). Compared with African Americans who earned bachelor's degrees at non-HBCUs, African American full-time faculty who earned their bachelor's degree from an HBCU

had more experience, were older, and had earned both their bachelor's degree and highest degree less recently.

African American faculty who earned their bachelor's degree from an HBCU were as likely as other African American faculty to hold doctoral degrees (about 46%) and to have held research assistantships during graduate school (about 20%). But, a smaller percent of African Americans who earned their bachelor's degree from an HBCU than of other African Americans received grants, fellowships, and/or scholarships during graduate school (51% versus 59%). African Americans who earned their bachelor's degree from an HBCU took longer, on average, to complete a doctoral degree than other African Americans. About 7% of African Americans who earned their bachelor's degree from an HBCU earned a doctorate from an HBCU, compared with only 2% of African Americans who earned their bachelor's degree from non-HBCUs.

African American faculty who earned their bachelor's degree from an HBCU were as likely as other African American faculty to be the principal or co-principal investigator on at least one funded research project. But, a smaller percent of African American faculty with a bachelor's degree from an HBCU than of other African American faculty spent a high amount of time on research relative to teaching (21% versus 30%). Only 31% of African American faculty with bachelor's degrees from HBCUS had at least one refereed publication in the past two years, compared with 40% of other African American faculty. Receiving a bachelor's degree from an HBCU appears to be unrelated to satisfaction and control over one's work.

The descriptive statistics also suggest that HBCUs may be important sources of African American faculty in the fields of education and science, math, and engineering. A higher percent of African American faculty who earned bachelor's degrees from HBCUs than of other African American faculty worked in the fields of education (17% versus 10%) and science, math, and engineering (19% versus 11%). Only 11% of African American faculty who earned a bachelor's degree from an HBCU worked in health science fields, compared with 20% of African American faculty who earned bachelor's degrees from non-HBCUs.

African Americans who earned their bachelor's degrees from an HBCU were relatively overrepresented among faculty working at predominantly Black institutions and relatively underrepresented among faculty working at research universities. More than one-half (55%) of African American full-time faculty who earned bachelor's degrees from HBCUs worked in predominantly Black institutions, compared with 24% of other African American faculty. Only 11% of African American faculty with bachelor's degrees from HBCUs, but 22% of other African American faculty, worked at research universities.

Insert Table 3 about here

Characteristics of African American faculty by doctoral degree origins

Less than one-half of all African American full-time faculty hold a doctoral degree (46%). Table 3 shows that 9% of African American full-time faculty with doctoral degrees earned their doctorates from an HBCU. On average, African American full-time faculty with doctoral degrees from HBCUs were younger and had received their bachelor's degrees more recently than other African American full-time faculty with doctorates. African American faculty with doctorates from HBCUs also appear to be more likely than other African American faculty with doctorates to be working in the fields of science, mathematics, and engineering (46% versus 20%), at private liberal arts colleges (29% versus 12%), and at predominantly Black colleges and universities (70% versus 41%). African Americans with doctorates from HBCUs and African Americans with doctorates from non-HBCUs appear to be equally likely to have at least one refereed publication in the past two years (64% versus 57%) and have similar levels of satisfaction and control over their work (0.001 versus –0.038).

Relationship between attending an HBCU and research productivity

Logistic regression analysis is used to isolate the effects of receiving a bachelor's degree and a doctoral degree from an HBCU on research productivity holding constant background characteristics, undergraduate socialization, graduate socialization, and current socialization experiences. Table 4 shows the delta-*p* statistics for each independent variable in the model. The delta-*p* statistic represents the increase in the probability of having at least one refereed publication during the past two years associated

with a one unit increase in each independent variable (Cabrera, 1994). The final model correctly classifies the research productivity of 79% of all African American full-time faculty, 86% of faculty with no refereed publications, and 66% of faculty with at least one refereed publication. The results presented in Table 4 reveal that current socialization experiences contribute most to the model's fit, followed by graduate school socialization experiences. Undergraduate socialization experiences, as measured by receiving the bachelor's degree from an HBCU as well as by undergraduate academic performance, are unrelated to research productivity.

Insert Table 4 about here

The logistic regression analyses show that neither receiving a bachelor's degree from an HBCU nor receiving a doctoral degree from an HBCU is related to research productivity among African American full-time faculty after controlling for background characteristics, undergraduate socialization, graduate school socialization, and current socialization. The probability of having at least one refereed publication is higher for African American full-time faculty who have earned a doctoral degree, allocate a relatively high percent of time to research rather than teaching, teach only graduate students, are the principal or co-principal investigator on a funded research project, and work in a research or doctoral university rather than a public two-year college. Working at a predominantly Black college or university is unrelated to research productivity after taking into account background characteristics as well as undergraduate, graduate, and current socialization experiences.

To determine whether the relationships between particular independent variables and two-year research productivity are the same for African American women and men, the logistic regression analyses are repeated by entering interactions for female with each independent variable into the model one interaction at a time. Several interactions (not shown) significantly improved the fit of the model. To facilitate the interpretation of the interactions, separate logistic regressions are conducted for African American women and African American men. Table 5 summarizes the delta-p statistics in the final models for African American women and men.

Insert Table 5 about here

Neither having earned a bachelor's degree from an HBCU nor having earned a doctoral degree from an HBCU is related to research productivity among African American women or men full-time faculty after controlling for background characteristics, undergraduate socialization, graduate socialization, and current socialization. Holding a doctoral degree and spending a high amount of time on research rather than teaching are important predictors of research productivity for both women and men. Being a principal or co-principal investigator on a funded research project appears to be a more important predictor of research productivity for women than for men. Women who work in a research university are more likely than other women to have at least one refereed publication in a two-year period, whereas men who work in public two-year institutions are less likely than other men to have at least one refereed publication. Working in a predominantly Black college or university is unrelated to research productivity among both women and men full-time African American faculty.

Relationship between attending an HBCU and successful socialization

Table 6 shows the standardized regression coefficients for the predictors of satisfaction and control over work among African American full-time faculty. The final model explains only 9% of the variance in this dependent variable. As indicated by the non-significant change in R^2, neither undergraduate socialization experiences nor graduate school socialization experiences are related to satisfaction and control over one's work.

Insert Table 6 about here

Interestingly, African American women appear to have lower levels of satisfaction and control over their work than African American men after taking into account differences in other variables. In order to more fully examine sex differences in the predictors of satisfaction and control over work, interaction terms between sex and each independent variable are entered into the model one term at a time. Several interactions significantly improve the model fit. To facilitate the interpretations of the interactions, separate regression analyses are conducted for African American women and African American men. Table 7 compares the unstandardized regression coefficients in the final models.

Insert Table 7 about here

The results suggest differences in the influence of two of the predictors of satisfaction and control over one's work between African American women and men. First, after controlling for background characteristics, undergraduate socialization, graduate school socialization, and current socialization experiences, having earned a bachelor's degree from an HBCU appears to have a positive influence on satisfaction and control over work among African American women faculty ($p < .05$), whereas having earned a bachelor's degree from an HBCU is unrelated to this measure of successful socialization among African American men. After taking other variables into account, having earned the highest degree from a research university is associated with lower levels of satisfaction and control over work for African American women, but associated with higher levels of satisfaction and control over work for African American men.

Discussion

At least four conclusions may be drawn from this research. First, the results of this study generally indicate that having earned a bachelor's degree or a doctoral degree from an HBCU is unrelated to the preparation or socialization of African American faculty over controlling for background characteristics, undergraduate socialization, graduate socialization, and current socialization experiences. The descriptive statistics show that similar percentages of African American full-time faculty who did and did not earn their bachelor's degree from an HBCU have attained doctoral degrees (about 46%). As found by Pascarella, Smart, and Stoecker (1989), this research also suggests that attending an HBCU may have a more positive influence on educational and occupational outcomes for African American women than for African American men. Among African American women faculty, earning a bachelor's degree from an HBCU is marginally ($p < .05$) associated with more positive levels of satisfaction and control over one's work after taking into account background characteristics and undergraduate, graduate, and current socialization experiences. Therefore, the results of this research suggest that undergraduates who attend HBCUs are not at a relative disadvantage during their doctoral studies or faculty careers because they have attended an HBCU. These findings are contrary to notions of cumulative advantage which

suggest that, because of historical differences in access to the nation's elite graduate programs and most eminent sponsors, minorities are further disadvantaged over time with regard to peer recognition, access to resources for research, and scientific productivity (Merton, 1988).

Second, the descriptive analyses presented in this research suggest that HBCUs may be especially important producers of African American faculty in the fields of education and science, mathematics, and engineering. In 1995, about 37% of all doctorates to African Americans were in the field of education and 13% were in the fields of science, mathematics, and engineering (NCES, 1997). The descriptive analyses reveal that higher percentages of African American full-time faculty with bachelor's and doctoral degrees from HBCUs than of African American full-time faculty with bachelor's and doctoral degrees from non-HBCUs work in science, mathematics, and engineering fields (19% versus 11%, and 46% versus 20%, respectively). These findings are consistent with other research. Analyses of the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) Completions Survey reveal that HBCUS represent ten of the top ten producers of bachelor's degrees to African Americans in biology, nine of the top ten in chemistry, eight of the top ten in mathematics, and seven of the top ten in engineering. Wenglinsky (1997) concluded that undergraduates attending HBCUs were more likely to plan to enroll in a graduate program in science, engineering, or business and were less likely to plan to enroll in a graduate program in the social sciences or health/agriculture than undergraduates attending traditionally White colleges and universities. Solorzano (1995) found that, after controlling for institutional size, 30 of the top 50 baccalaureate producers of African American female doctorates in science and engineering between 1980 and 1990 were HBCUs. Among African American male doctorates in science and engineering, 23 of the top 50 baccalaureate institutions were HBCUs.

Third, the findings presented in this study indicate that a substantial proportion of African Americans who were educated by HBCUs return to HBCUs as faculty members. More than one-half (55%) of African American full-time faculty with bachelor's degrees from HBCUs work at predominantly Black colleges and universities, compared with only 24% of other African American full-time faculty. About 70% of African American full-time faculty with doctoral degrees from HBCUs work

at predominantly Black institutions, compared with 41% of other African American full-time faculty with doctorates. Based on their comprehensive review and synthesis of prior research, Tack and Patitu (1992) concluded that minority faculty may prefer to work at HBCUs so that they can assist greater numbers of minority students and work with more minority professors, and, thereby, feel less isolated. The results of this research show that working at a predominantly Black college or university is unrelated to either measure of socialization (research productivity and satisfaction and control over one's work) among both African American women and men full-time faculty.

Finally, the findings from this research reveal that the role of HBCUs in preparing African Americans for faculty careers has changed over time. The descriptive analyses show that only 15% of African American full-time faculty who earned their bachelor's degree from an HBCU are under the age of 40, compared with 32% of other African American full-time faculty. Nearly one-half (47%) of African American full-time faculty with bachelor's degrees from HBCUs are age 50 or older, compared with only 28% of other African American full-time faculty. These findings are also consistent with prior research. About three-fourths of all Black scientists who earned doctoral degrees prior to 1964, two-thirds of all Black scientists who earned doctorates between 1965 and 1974 (Pearson & Pearson, 1985), and one-half (55%) of all Blacks who earned doctorates between 1975 and 1980 (Brazziel, 1983) have been found to have earned their bachelor's degree from an HBCU.

Implications

The analyses presented in this study provide further evidence of the important contribution HBCUs are making to the education of African Americans. Although increased numbers of African American students are attending TWIs, the findings from this research suggest that HBCUs continue to play an important role in preparing African American faculty. In fall 1992, 40% of all African American full-time faculty had earned a bachelor's degree and 9% of all African American full-time faculty with doctorates had earned their doctoral degree from an HBCU. The success of HBCUs in facilitating the movement of African Americans up the educational pipeline from bachelor's degree recipients to college and university faculty has been accomplished in the context of low levels of institutional resources and

more disadvantaged student bodies. Although African Americans continue to be underrepresented at all levels of higher education, their most severe underrepresentation is at the doctoral degree level. Working to eliminate this underrepresentation is a necessary step toward raising the representation of African Americans among the nation's college and university faculty. Therefore, the results of this research should be used to guide future research on ways to further increase the flow of African Americans along the educational pipeline. Lessons about the success of HBCUs in educating African Americans should be used not only to bolster and support their efforts, but also to serve as an example for predominantly White colleges and universities.

Specifically, future research should explore the ways in which attending an HBCU may influence the socialization of potential African American faculty. Prior research has shown that interactions between students and faculty contribute to the socialization process (Bragg, 1976; Pascarella, 1980; Weis, 1981; Girves & Wemmerus, 1988; Baird, 1990). Faculty may serve as "socializing agents" who clarify goals, establish career plans, provide explanations for experiences, offer rewards and sanctions to encourage progress, evaluate performance, provide feedback and encouragement, and establish collegiality among faculty and students (Bragg, 1976; Weis, 1981; Baird, 1990). Faculty may also serve as role models, sponors, and mentors. Role models "exemplify the knowledge, skills, attitudes, and values of the profession" (Baird, 1990, p. 368). Sponors provide opportunities to develop the necessary qualities and skills (Becker & Straus, 1956), by coaching an individual through the informal norms of the profession (Clark & Corcoran, 1986) and by providing introductions, nominations, and recommendations (Reskin, 1979). Mentors coach, instruct, advise, guide, and assist their proteges accomplish their goals and develop intellectually and professionally (Blackwell, 1989).

Notes

[1]The NSOPF:93 does not contain a variable to indicate whether an individual works at an HBCU, per se. In these analyses, institutions in which African American students comprise more than 50% of the student body are classified as predominantly Black.

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Table 1. Factor scales used in model of faculty socialization

Variable	Factor loading
Satisfaction and control over one's work	
Satisfaction with authority to decide course content	0.54
Satisfaction with authority to decide courses taught	0.66
Satisfaction with authority to make other job decisions	0.71
Satisfaction with work load	0.71
Satisfaction with time available to advise students	0.62
Satisfaction with time to keep current in one's field	0.72
Satisfaction with advancement opportunity	0.68
Eigenvalue	3.67
Alpha reliability coefficient	0.83
Experience	
Number of years at current rank	0.82
Number of years at current institution	0.80
Number of years since highest degree	0.80
Age	0.79
Eigenvalue	2.57
Alpha reliability coefficient	0.79

Table 2. Model of faculty socialization

Variable	Definition
Successful socialization	
Research productivity	At least one refereed publication in a two-year period (1 = yes, 0 = no). Refereed publications include: articles in refereed journals, chapters in edited books, books, monographs, and book reviews.
Satisfaction & control over one's work	Confirmatorily derived composite measuring satisfaction with authority to decide course content, decide courses taught, and make other job decisions, as well as satisfaction with work load, time available to advise students, time to keep current in their field, and advancement opportunities. See Table 1 for factor loadings.
Background characteristics	
Citizenship	U.S. citizen; 1 = yes, 0 = no
Female	Female; 1 = yes, 0 = no
Experience	Confirmatorily derived factor composite comprised of: age, number of years at current rank, number of years at current institution, and number of years since highest degree. See Table 1 for factor loadings.
Undergraduate socialization	
Academic performance	Graduated magna cum laude or summa cum laude; 1 = yes, 0 = no
Bachelor's from HBCU	Received bachelor's degree from HBCU; 1 = yes, 0 = no
Graduate school socialization	
Educational attainment	Attained a doctoral degree; 1 = yes, 0 = no
Graduate institution type	Highest degree from a research I university; 1 = yes, 0 = no
Doctorate from HBCU	Received doctoral degree from HBCU; 1 = yes, 0 = no
Teaching assistantship	Held a teaching assistantship; 1 = yes, 0 = no
Research assistantship	Held a research assistantship; 1 = yes, 0 = no
Fellowship or Scholarship	Received a scholarship, fellowship or grant; 1 = yes, 0 = no
Current socialization	
Research/teaching tradeoff	Ratio of the percent of time spent on research to the percent of time spent on teaching, summarized by three categorical variables: No time on research (1 = yes); High amount of time on research relative to teaching (1 = yes). Spending a moderate amount of time on research relative to teaching is the omitted or reference category.
Teaching level	Teach only graduate students (1 = yes) or teach only undergraduate students (1 = yes). Teaching both undergraduate and graduate students is the omitted or reference category
Principal investigator	Principal or co-principal investigator on at least one funded research project; 1 = yes, 0 = no
Academic field	Primary teaching field is fine arts (1 = yes); business (1 = yes); education (1 = yes); health sciences (1 = yes); humanities (1 = yes); science, math, or engineering (1 = yes); or social sciences (1 = yes). Other academic field is the omitted or reference category.
Institutional type	Employed at research university (1 = yes); doctoral university (1 = yes); comprehensive college (1 = yes); private liberal arts college (1 = yes); or public two-year institution (1 = yes). Other type of institution is the omitted or reference category.
Black institution	Work at an institution in which African American students comprise more than 50% of the student body; 1 = yes, 0 = no

Table 3. Characteristics of African American faculty who did and did not receive bachelor's and doctoral degrees from Historically Black Colleges and universities: Fall 1992

	Bachelor's degree				Doctoral degree			
Characteristic	Total	Non-HBCU	HBCU		Total	Non-HBCU	HBCU	
Total	100%	60%	40%		100%	91%	9%	
Weighted N	23,062	13,823	9,239		10,617	9,633	984	
Adjusted Weighted N	1,322	792	529		608	552	56	
Citizen	100%	100%	100%	$p < .001$	100%	100%	100%	$p = .28$
No	7%	11%	2%		12%	11%	16%	
Yes	93%	89%	98%		88%	89%	84%	
Sex	100%	100%	100%	$p < .01$	100%	100%	100%	$p = .11$
Male	52%	55%	47%		60%	59%	70%	
Female	48%	45%	53%		40%	41%	30%	
Experience composite				$p < .001$				$p = .56$
Mean	12.7	11.5	14.3		12.7	12.7	12.2	
(Standard deviation)	(6.5)	(6.2)	(6.6)		(6.5)	(6.6)	(5.6)	
Age	100%	100%	100%	$p < .001$	100%	100%	100%	$p < .01$
Under 40	25%	32%	15%		17%	18%	26%	
40 - 49	39%	40%	38%		38%	39%	51%	
50 - 59	25%	20%	31%		30%	29%	21%	
60 or older	11%	8%	16%		14%	13%	2%	
Year of bachelor's degree	100%	100%	100%	$p < .001$	100%	100%	100%	$p < .01$
1965 or earlier	29%	20%	43%		40%	38%	18%	
1966 to 1976	44%	44%	42%		44%	45%	60%	
1977 to 1980	13%	15%	10%		12%	13%	19%	
1981 or later	15%	21%	6%		5%	5%	4%	
Year of highest degree	100%	100%	100%	$p < .001$	100%	100%	100%	$p < .05$
Before 1974	21%	16%	30%		19%	18%	4%	
1974 to 1979	25%	22%	28%		24%	24%	21%	
1980 to 1985	24%	26%	22%		25%	27%	39%	
1986 or later	30%	36%	20%		31%	32%	37%	
BA degree with honors	100%	100%	100%	$p < .001$	100%	100%	100%	$p = .42$
No	86%	90%	80%		82%	82%	86%	
Yes	14%	10%	20%		18%	18%	14%	
Years to doctoral degree				$p < .001$				$p = .56$
Mean	12.7	11.5	14.3		12.7	12.7	12.2	
(Standard Deviation)	(6.5)	(6.2)	(6.6)		(6.5)	(6.6)	(5.6)	
Doctoral degree	100%	100%	100%	$p = .16$				
No	54%	56%	52%					
Yes	46%	44%	48%					
Highest degree - Research I	100%	100%	100%	$p = .11$	100%	100%	100%	$p < .05$
No	51%	50%	54%		38%	36%	53%	
Yes	49%	50%	46%		62%	64%	47%	

Table 3. Characteristics of African American faculty who did and did not receive bachelor's and doctoral degrees from Historically Black Colleges and universities: Fall 1992 (continued)

	Bachelor's degree				Doctoral degree			
Characteristic	Total	Non-HBCU	HBCU		Total	Non-HBCU	HBCU	
Doctorate from HBCU	100%	100%	100%	p < .001				
No	96%	98%	93%					
Yes	4%	2%	7%					
Graduate school experiences	100%	100%	100%		100%	100%	100%	
Teaching assistantship	31%	33%	28%	p = .05	44%	43%	46%	p = .65
Research assistantship	20%	21%	17%	p = .11	33%	33%	36%	p = .68
Fellowship, scholarship, grant	56%	59%	51%	p < .01	64%	63%	75%	p = .08
Ratio research to teaching	100%	100%	100%		100%	100%	100%	
No time on research	28%	25%	34%	p < .001	16%	15%	23%	p = .12
High ratio on research	27%	30%	21%	p < .001	37%	38%	30%	p = .28
Teaching level	100%	100%	100%		100%	100%	100%	
Undergraduates only	66%	65%	69%	p = .11	60%	60%	63%	p = .71
Graduate students only	11%	12%	9%	p = .12	14%	13%	23%	p < .05
Principal investigator	100%	100%	100%	p = .32	100%	100%	100%	p = .20
No	83%	82%	84%		74%	74%	67%	
Yes	17%	18%	16%		26%	26%	33%	
Field	100%	100%	100%		100%	100%	100%	
Fine arts	7%	9%	6%	p = .07	4%	4%	5%	p = .74
Business	6%	5%	8%	p = .06	5%	5%	0%	p = .07
Education	13%	10%	17%	p < .01	17%	16%	11%	p = .23
Health sciences	16%	20%	11%	p < .001	8%	8%	7%	p = .81
Humanities	12%	12%	12%	p = .94	14%	14%	12%	p = .65
Science, math, engineering	14%	11%	19%	p < .001	17%	20%	46%	p < .001
Social sciences	13%	15%	12%	p = .14	20%	20%	14%	p = .26
Institution type	100%	100%	100%		100%	100%	100%	
Research	18%	22%	11%	p < .001	26%	25%	18%	p = .17
Doctoral	13%	14%	12%	p = .20	15%	14%	4%	p < .05
Comprehensive	28%	26%	32%	p < .01	38%	37%	25%	p < .05
Private liberal arts	9%	7%	12%	p < .01	10%	12%	29%	p < .001
Public two-year	23%	23%	22%	p = .67	6%	6%	7%	p = .68
Black institution	100%	100%	100%	p < .001	100%	100%	100%	p < .001
No	63%	76%	45%		62%	59%	30%	
Yes	37%	24%	55%		38%	41%	70%	
Any refereed publications	100%	100%	100%	p < .01	100%	100%	100%	p = .27
No	64%	60%	69%		43%	43%	36%	
Yes	36%	40%	31%		57%	57%	64%	
Satisfaction & control over work				p = .31				p = .07
Mean	0.000	-0.024	0.035		-0.034	-0.038	0.001	
(Standard Deviation)	1.00	1.00	1.00		1.01	1.00	1.11	

Table 4. Increase in the probability of having at least one refereed publication in a two-year period associated with a one unit increase in each independent variable (delta-p statistics)

Independent variable	Model 1 Background characteristics	Model 2 Undergraduate socialization	Model 3 Graduate socialization	Model 4 Current socialization
Female	-0.086 **	-0.084 **	-0.050	-0.017
Citizen	-0.219 ***	-0.213 ***	-0.146 **	-0.143 *
Experience	-0.041 **	-0.036 *	-0.044 **	-0.031
Undergraduate Honors		0.071	-0.006	-0.019
Bachelor's from HBCU		-0.040	-0.065 *	-0.032
Doctoral degree			0.355 ***	0.258 ***
Doctorate from HBCU			0.063	0.071
Highest degree from research I university			0.051	-0.015
Teaching assistantship			0.050	0.034
Research assistantship			0.141 **	0.084
Scholarship/grant			0.087 **	0.021
No time on research				-0.194 ***
High ratio research/teaching				0.230 ***
Teach only undergraduates				-0.004
Teach only graduate students				0.189 **
Principal or co-principal investigator				0.146 **
Fine arts				-0.093
Business				0.096
Education				-0.029
Health sciences				-0.008
Humanities				0.026
Science, math, engineering				0.096
Social sciences				0.085
Research university				0.212 **
Doctoral university				0.170 *
Comprehensive college				-0.040
Private liberal arts				0.064
Public two-year				-0.197 **
Black institution				0.024
Number of cases	1,249			
$\chi 2$, df	63.3 ***	67, 5 ***	286, 11 ***	530, 29 ***
Block $\chi 2$, df		4, 2	219, 6 ***	244, 18 ***
-2 log likelihood	1,586	1,582	1,364	1,120
Pseudo R^2	0.048	0.051	0.186	0.298
% correctly classified – adjusted	60%	59%	71%	77%
% correct no publications – adjusted	65%	63%	69%	76%
% correct at least 1 publication – adjusted	51%	53%	75%	79%
Baseline P	0.362			

Notes: Delta-p represents the change in the probability of enrolling in a four-year college or university associated with a one unit change in each independent variable. Pseudo R2 = c2/(N+c2);
Delta-p = exp(L1)/[1 + exp(L1)] - P0 (Cabrera, 1994)
Percent cases correctly classified adjusted for the non 50/50 distribution. *** p < .001, ** p < .01, * p < .05

Table 5. Increase in the probability of having at least one refereed publication in a two-year period associated with a one unit increase in each independent variable (delta-p) by sex

Independent variable	Total	Women	Men
Female	-0.017		
Citizen	-0.143 *	-0.096	-0.172 *
Experience	-0.031	-0.040	-0.019
Undergraduate Honors	-0.019	-0.106	0.064
Bachelor's from HBCU	-0.032	-0.001	-0.078
Doctoral degree	0.258 ***	0.247 ***	0.269 ***
Highest degree from research I univ.	0.071	-0.019	0.020
Doctorate from HBCU	-0.015	0.152	0.070
Teaching assistantship	0.034	0.121	-0.038
Research assistantship	0.084	0.087	0.120
Scholarship/grant	0.021	0.124 *	-0.070
No time on research	-0.194 ***	-0.190 ***	-0.224 ***
High ratio research/teaching	0.230 ***	0.206 **	0.241 ***
Teach only undergraduates	-0.004	0.008	-0.029
Teach only graduate students	0.189 **	0.197	0.223 *
Principal or co-principal investigator	0.146 **	0.198 **	0.135
Fine arts	-0.093	-0.065	-0.132
Business	0.096	0.275 *	0.000
Education	-0.029	0.107	-0.163
Health sciences	-0.008	0.094	-0.081
Humanities	0.026	0.023	0.007
Science, math, engineering	0.096	0.311 *	0.007
Social sciences	0.085	0.242 *	-0.021
Research university	0.212 **	0.388 **	0.044
Doctoral university	0.170 *	0.257 *	0.059
Comprehensive college	-0.040	0.117	-0.196 *
Private liberal arts	0.064	0.214	-0.087
Public two-year	-0.197 **	-0.077	-0.300 **
Black institution	0.024	0.085	-0.005
Constant	-0.181 *	-0.277 *	0.086
Number of cases	1,249	611	638
χ^2, df	530, 29 ***	259, 28 ***	289, 28 ***
-2 log likelihood	1,120	486	600
Pseudo R^2	0.298	0.297	0.310
% correctly classified – adjusted	77%	79%	76%
% correct no publications – adjusted	76%	79%	76%
% correct at least 1 publication – adj.	79%	81%	77%
Baseline p	0.362	0.305	0.415

Notes: Delta-p represents the change in the probability of enrolling in a four-year college or university associated with a one unit change in each independent variable.
Pseudo R2 = c2/(N+c2); Delta-p = exp(L1)/[1 + exp(L1)] - P0 (Cabrera, 1994)
Percent of cases correctly classified is adjusted for the non 50/50 distribution.
*** $p < .001$, ** $p < .01$, * $p < .05$

Table 6. Predictors of satisfaction and control over work among African American full-time faculty (standardized regression coefficients)

Independent variable	Model 1 Background characteristics	Model 2 Undergraduate socialization	Model 3 Graduate socialization	Model 4 Current socialization
Female	-0.125 ***	-0.125 ***	-0.126 ***	-0.120 ***
Citizen	0.066 *	0.064 *	0.056	0.037
Experience	0.113 ***	0.111 ***	0.111 ***	0.134 ***
Undergraduate Honors		-0.037	-0.031	-0.050
Bachelor's from HBCU		0.005	0.004	0.035
Doctoral degree			-0.035	-0.039
Highest degree from research I			0.009	0.011
Doctorate from HBCU			0.016	0.022
Teaching assistantship			0.027	0.047
Research assistantship			-0.032	-0.040
Scholarship/grant			-0.016	-0.034
No time on research				0.079 *
High ratio research/teaching				0.094 **
Teach only undergraduates				0.024
Teach only grad students				0.104 **
Principal investigator				-0.049
Fine arts				-0.096 **
Business				0.043
Education				-0.069
Health sciences				-0.038
Humanities				0.037
Science, math, engineering				-0.052
Social sciences				-0.002
Research university				-0.077
Doctoral university				-0.038
Comprehensive college				-0.083
Private liberal arts				-0.024
Public two-year				-0.097
Black institution				-0.095 **
R^2	0.034	0.036	0.038	0.089
Adjusted R^2	0.032	0.032	0.029	0.067
Change in R^2	$p < .001$	$p = .45$	$p = .76$	$p < .001$
Significance of Model	$p < .001$	$p < .001$	$p < .001$	$p < .001$

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 7. Predictors of satisfaction and control over work among African American women and men full-time faculty (unstandardized regression coefficients)

	Total		Women		Men		
	Unstandardized coefficient		Unstandardized coefficient		Unstandardized coefficient		Sex Difference
Independent variable	B	Std. error	B	Std. error	B	Std. error	(t-value)
Female	-0.852	0.217 ***					
Citizen	0.496	0.417	-0.531	1.245	0.618	0.455	-0.87
Experience	0.458	0.108 ***	0.446	0.174 *	0.381	0.139 **	0.29
Undergraduate Honors	-0.498	0.294	-0.113	0.417	-0.725	0.414	1.04
Bachelor's from HBCU	0.256	0.235	0.866	0.342 *	-0.071	0.334	1.96 *
Doctoral degree	-0.275	0.253	-0.004	0.358	-0.401	0.362	0.78
Highest degree research I	0.079	0.222	-0.781	0.324 *	0.977	0.310 **	-3.93 ***
Doctorate from HBCU	0.377	0.533	0.365	0.934	0.174	0.655	0.17
Teaching assistantship	0.352	0.243	0.059	0.367	0.514	0.332	-0.92
Research assistantship	-0.359	0.289	-0.316	0.444	-0.499	0.385	0.31
Scholarship/grant	-0.244	0.214	-0.402	0.308	-0.135	0.298	-0.62
No time on research	0.619	0.258 *	0.064	0.366	1.045	0.377 **	-1.87
High % time on research	0.758	0.264 **	1.244	0.415 **	0.310	0.349	1.72
Teach only undergraduates	0.186	0.288	0.730	0.436	-0.041	0.389	1.32
Teach only grad. students	1.134	0.387 **	1.368	0.622 *	1.293	0.502 *	0.09
Principal investigator	-0.450	0.290	-0.669	0.445	-0.103	0.386	-0.96
Fine arts	-1.276	0.452 **	-0.002	0.743	-1.811	0.570 **	1.93
Business	0.637	0.483	0.390	0.694	0.330	0.686	0.06
Education	-0.743	0.389	-0.599	0.552	-1.564	0.567 **	1.22
Health sciences	-0.367	0.365	-0.773	0.520	-0.140	0.554	-0.83
Humanities	0.409	0.395	-0.048	0.573	0.593	0.549	-0.81
Science, math, engineering	-0.514	0.381	-1.227	0.644	-0.239	0.487	-1.22
Social sciences	-0.016	0.382	-0.018	0.562	-0.236	0.522	0.28
Research university	-0.717	0.461	-0.630	0.670	-1.056	0.649	0.46
Doctoral university	-0.398	0.463	-1.212	0.700	0.171	0.648	-1.45
Comprehensive college	-0.650	0.399	-0.814	0.571	-0.532	0.567	-0.35
Private liberal arts	-0.297	0.483	-0.469	0.734	-0.417	0.660	-0.05
Public two-year	-0.830	0.425	-0.986	0.591	-0.560	0.625	-0.50
Black institution	-0.699	0.249 **	-0.622	0.365	-0.593	0.342	-0.06
Constant	8.815	0.649 ***	9.030	1.467 ***	8.421	0.832 ***	0.36
R^2	0.089		0.106		0.137		
Adjusted R^2	0.067		0.059		0.096		
Significance of model	p< .001		p< .001		p< .001		

*** p < .001, ** p < .01, * p < .05